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Andrew D. Flockhart

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EXAMINER

WAI, ERIC CHARLES

ART UNIT

PAPER NUMBER

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/673,118	<b>Applicant(s)</b> FLOCKHART ET AL.	
	<b>Examiner</b> ERIC C. WAI	<b>Art Unit</b> 2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 August 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3, 6-14, 16-26 and 28-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6, 7, 9-11, 13, 14, 16-26, 28, 30, 31, 33 and 34-38 is/are rejected.
- 7) ☒ Claim(s) 8, 12, 29 and 32 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/25/2009</u> .   | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. Claims 1-3, 6-14, 16-26, and 28-38 are presented for examination.

#### ***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 16-19, 20-25, and 36-37 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.
3. Claims 16 and 20 recite an apparatus; however, it appears that the system would reasonably be interpreted by one of ordinary skill in the art as software per se, failing to be tangibly embodied or include any recited hardware as part of the system.  
Furthermore, software is an equivalent means for performing the function of claim 16.  
The components of claim 20 can all be construed as software.

#### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 35-38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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6. Claims 35-37 recite, wherein said number of opportunities (#OPPS) is calculated as  $\#OPPS = ((\text{Target time} - \text{EWT}) / \text{WAT}) + 1$ . It is unclear in the claims what is meant by EWT and WAT and how such values are derived. Applicant is advised to amend the claims according to claim 8.

### ***Claim Interpretation***

7. Claims 1, 16, and 20 recite “determining a relative probability for each service location included in the plurality of locations by calculating a number of opportunities to service said work request within said target time by each service location”. The term “number of opportunities” is open to interpretation but is defined in greater detail in dependent claims 8, 12, 29, and 32. Such dependent claims have been indicated as being allowable subject matter. Absent a more specific definition in independent claim 1, Examiner interprets “a number of opportunities” as a processing rate for each service location. One of ordinary skill in the art would realize that a processing rate is the rate in which a service location can process a work request within a given unit of time. For example, if a service location can process 10 requests per minute, then the number of opportunities for processing the request within a target time of 1 minute would be 10. No other criteria are recited in the claims for balancing resource loads.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-3, 6-7, 13, 16-17, 20, 25-26, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bournas (US Pat No. 6,748,414).

10. Regarding claim 1, Bournas teaches a method for balancing resource loads, comprising:

receiving a work request (col 4 lines 60-62);

determining for each of a plurality of service locations a probability of servicing said work request within a target time (col 6 lines 21-28, wherein an estimated load is indicative of a server's probability to process the request), wherein said determined probability includes determining a relative probability for each service location included in the plurality of service locations by calculating a number of opportunities to service said work request within said target time by each service location included in the plurality of service locations (col 7 lines 10-25, wherein the estimated workload calculation includes determining a service rate which is calculated by dividing the amount of work completed by the service time, wherein a higher service rate indicates a greater number of opportunities to process request within a unit of time);

selecting at least a first service location having at least one of a greatest determined probability of servicing said work request within said target time and a sufficient determined probability of servicing said work request within said target time (col 7 lines 25-30, wherein the server which the smallest workload is identified); and

assigning said work request to said selected service location (col 7 lines 25-30, wherein the server is chosen).

11. Bournas does not explicitly teach that the estimated workload is a relative probability. However, the term probability is defined as “likelihood that an event will happen” (Microsoft Computer Dictionary, 5<sup>th</sup> Edition, 2002). Therefore, any measurement that indicates a likelihood that the server has a higher chance of completing the request (i.e. lower estimated workload) is a relative probability.

12. Regarding claims 2 and 6, Bournas teaches that selecting at least a first service location comprises selecting at least a first service location having a sufficient determined probability or at least a selected minimum number of opportunities to service said work request within said target time (col 7 lines 25-30, wherein it is inherent that the server must be able to process the task).

13. Regarding claim 3 and 7, Bournas teaches the step of selecting at least a first service location comprises selecting at least a first service location having a greatest determined probability or a greatest number of opportunities to service said work

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request within said target time (col 7 lines 25-30, wherein the server which the smallest workload is identified).

14. Regarding claim 13, Bournas teaches that each of said service locations is associated with a queue capable of containing a plurality of work requests (col 5 lines 12-15).

15. Regarding claim 16, it is the apparatus claim of claim 1 above. Therefore, it is rejected for the same reasons as claim 1 above.

16. Regarding claim 17, Bournas teach that said service location is associated with a queue and comprises at least one associated resource (col 5 lines 12-15, wherein it is inherent that server have resources).

17. Regarding claim 20, Bournas teaches a work allocation apparatus, comprising:  
a plurality of service locations (col 4 lines 60-65, multiple servers);  
a plurality of service resources, wherein at least a one of said service resources is associated with each of said service locations (wherein it is inherent that a computer system has associated resources);  
a communication network interface, operable to receive work requests (col 2 lines 60-67, wherein it is inherent that a network interface exists); and

a controller, wherein said controller operates to calculate a relative probability that a work request will be serviced within a target time for each service location included in the plurality of service locations (col 6 lines 21-28, wherein an estimated load is indicative of a server's probability to process the request), wherein said relative probability is determined for a service location by calculating a number of opportunities to service said work request within a predetermined target time (col 7 lines 10-25, wherein the estimated workload calculation includes determining a service rate which is calculated by dividing the amount of work completed by the service time, wherein a higher service rate indicates a greater number of opportunities to process request within a unit of time), wherein a work request received at said communication network interface is assigned to a service location having at least one of a highest probability of servicing said work request within a predetermined target time and a sufficient probability of servicing said work request within a predetermined target time (col 7 lines 25-30, wherein the server which the smallest workload is identified).

18. Bournas does not explicitly teach that the estimated workload is a relative probability. However, the term probability is defined as "likelihood that an event will happen" (Microsoft Computer Dictionary, 5<sup>th</sup> Edition, 2002). Therefore, any measurement that indicates a likelihood that the server has a higher chance of completing the request (i.e. lower estimated workload) is a relative probability.

19. Regarding claim 25, Bournas teaches that said service locations each comprise a server (col 4 lines 60-67).

20. Regarding claims 26, and 28, they are the apparatus claims of claim 1.

Therefore, they are rejected for the same reasons as claim 1.

21. Claims 14, 18, and 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bournas (US Pat No.6,748,414) in view of Applicant's Admitted Prior Art (AAPA).

22. Regarding claims 14 and 18, Bournas does not teach that said service location comprise at least one split.

23. However, AAPA teaches the use of agents in call center systems and the common practice of dividing up agents into splits to differentiate skills and capabilities (pg 1 lines 10-20). Agents are defined as background tasks that perform tasks for users (Microsoft Computer Dictionary, 5<sup>th</sup> Edition, 2002). It would have been obvious to one of ordinary skill in the art to modify Bournas to teach using a split. One would be motivated by the desire to group service locations according to skills and capabilities to target work requests.

24. Regarding claim 21, AAPA teaches that said service resources comprise service agents ([0002]).

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25. Regarding claim 22, Bournas does not teach that said service resources are organized into splits

26. However, AAPA teaches the use of agents in call center systems and the common practice of dividing up agents into splits to differentiate skills and capabilities (pg 1 lines 10-20). It would have been obvious to one of ordinary skill in the art to modify Bournas to teach using a split. One would be motivated by the desire to group service locations according to skills and capabilities to target work requests.

27. Regarding claim 23, Bournas does not teach that said work request is associated with a request for assistance.

28. However, AAPA teaches the use of load balancing work in call centers (pg 1 lines 6-20). It would have been obvious to one of ordinary skill in the art to extend the teachings of Bournas to call centers where each work request is associated with a request for assistance.

29. Regarding claim 24, AAPA teaches that said communication network interface is interconnected to at least one of an Internet protocol network and a public switched telephone network ([0004]).

30. Claims 9-11, 19, 30-31, and 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bournas (US Pat No.6,748,414) in view of Costantini et al. (US Pat No. 5,506,898).

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31. Costantini was disclosed on IDS dated 12/14/2006.

32. Regarding claims 9-10, Bournas does not teach calculating an advance time metric or that the advance time metric comprises an expected wait time, wherein said step of selecting comprises selecting a location having a lowest expected wait time.

33. Costantini teaches the use of an average rate of advance in determining the estimated wait time in a queue (Fig 5, 502 and 504).

34. It would have been obvious to one of ordinary skill in the art at the time of the invention to include the use a measure such as a weighted advance time or average rate of advance in determining the estimated wait time. One would be motivated by the desire to produce a more accurate estimate of how long an item would or will have to wait in a particular queue before being serviced as evidenced by Costantini (col 2 lines 4-10).

35. Regarding claim 11, Costantini teaches that said advance time metric comprises a weighted advance time trend, wherein said step of selecting comprises selecting a location having a lowest weighted advance time trend (Fig 3, 302).

36. Regarding claim 19, it is the apparatus claim of claim 9 above. Therefore, it is rejected for the same reasons as claim 9 above.

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37. Regarding claims 30-31, and 33-34, they are the apparatus claims of claims 9, 11, and 15. Therefore, they are rejected for the same reasons as claims 8, 11, and 15.

### ***Allowable Subject Matter***

38. Claims 8, 12, 29, and 32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

39. Claims 35-38 are rejected under 35 USC § 112 and are objected to as being dependent upon a rejected base claim, but would be allowable if 35 USC § 112 rejections were remedied and if rewritten in independent form according to including all of the limitations of the base claim and any intervening claims.

### ***Response to Arguments***

40. Applicant's arguments filed 08/24/2009 have been fully considered but they are not persuasive.

41. Applicant argues:

- a. The cited portion of Bournas teaches measuring an arrival time and a service time to compute a service rate and does not teach a probability of servicing a work request

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b. The service rate merely represents a measured quantity rather than a performance goal as contemplated by certain embodiments of the present invention.

c. Bournas teaches away from embodiments of the present invention by teaching merely selecting a service location based on the smallest work load.

42. Examiner disagrees. Regarding a), Bournas is directed to distributing requests in a cluster of identical parallel servers (col1 lines 29-32). As such, the calculation of the estimated workload is equivalent to calculating a probability. A lower estimated workload among a cluster of identical servers indicates a higher probability of servicing within a target time. Therefore, calculating an estimated workload using service rates is equivalent to determining a probability of servicing a work request within a target time.

43. Regarding b), nothing in the claim language precludes utilizing a measured quantity such as the service rate from being used to calculate a probability such as an estimated workload.

44. Regarding c), Bournas does not teach away from the claimed invention. Bournas, at a high level does teach selecting a service location based on the smallest estimated workload. However, the estimated workload is a probability metric that is calculated using service rates, wherein the service rates indicate a number of opportunities to complete a work request within a given time frame.

***Conclusion***

45. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

46. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric C. Wai whose telephone number is 571-270-1012. The examiner can normally be reached on Mon-Thurs, 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng - Ai An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Meng-Ai An/  
Supervisory Patent Examiner, Art Unit 2195

/Eric C Wai/  
Examiner, Art Unit 2195